Russian Journal of Applied Chemistry 2014 vol.87 N8, pages 1021-1030

Effect of the phase composition of gibbsite on the specific surface area of coarse floccule of products formed in its dehydration under thermal treatment

Egorova S., Lamberov A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Pleiades Publishing, Ltd., 2014. Thermal and X-ray phase analyses, IR spectroscopy, and the method of low-temperature adsorption of nitrogen were used to study the phase composition of gibbsite and its effect on the specific surface are of coarse floccules of products obtained in dehydration of gibbsite upon its thermal treatment at 250-600°C in air. It was shown that the dehydration of gibbsite yields phase of coarse- and fine-crystalline gibbsite, χ-Al2O3 and γ-Al2O3 mBm, γ-Al2O3 Bm. The coefficients characterizing the contribution of phases to the specific surface area were determined for all the phases. The coefficients found for the coarse- and fine-crystalline boehmite and χ-Al2O3 make it possible to calculate with high degree of confidence the specific surface area of gibbsite dehydration products at a known phase composition. The value of Kγ-Al2O3 does not reflect the true contribution of γ-Al2O3 to the total specific surface area of the gibbsite dehydration products because of the texture transformations occurring in the oxide phase at T > 350°C.

http://dx.doi.org/10.1134/S1070427214080035